



# **2013 PAG Manual Revision**

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Overview with Questions & Answers

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# Webinar etiquette

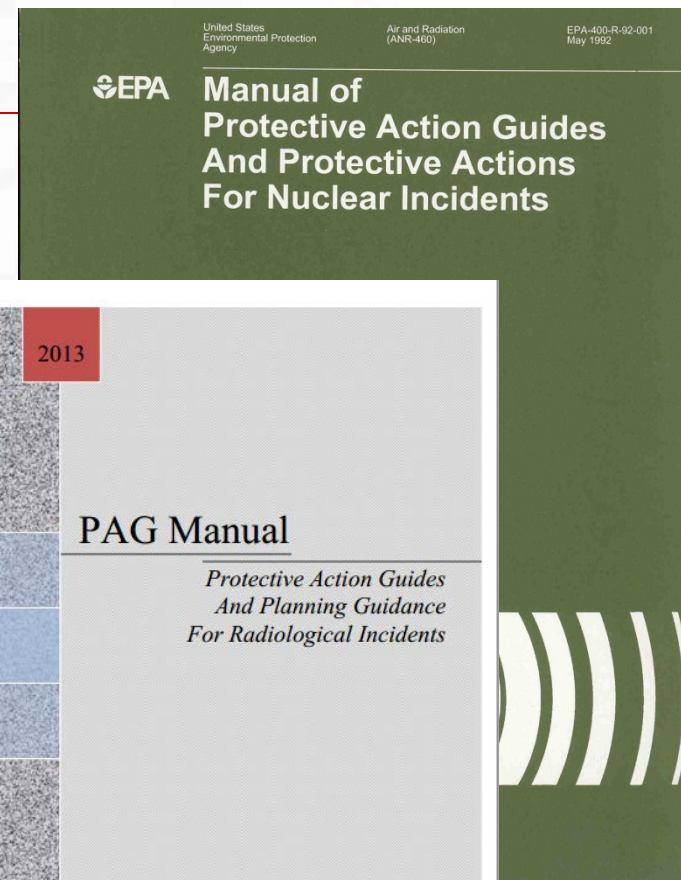
- Please put your phone on mute \*6
- Presentation for 20 minutes, followed by questions

Questions:

- Please type your questions in the chat box as we present
- We'll answer chat box questions after the presentation
- Comments must be submitted to the docket

# PAGs Manual

- Protective Action Guides (PAGs) Manual (1992)
- Early, Intermediate Phases only
- Promised Water and Late Phase (Recovery) PAGs



# 2013 Draft PAG Manual

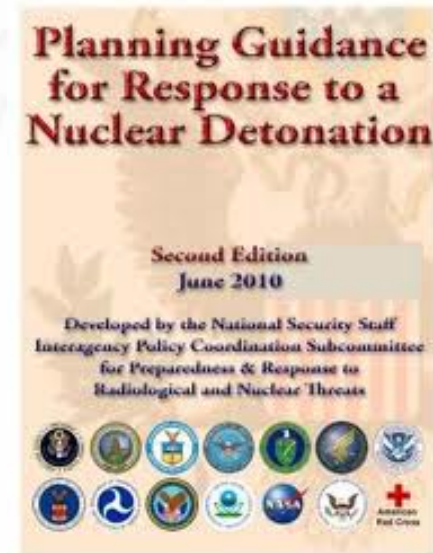
- Clarifies the use of PAGs for all radiological incidents, including terrorism
- Lowers projected thyroid dose for KI, via FDA
- Requests input on drinking water guidance
- Refers to 1998 FDA food guidance
- Includes guidance for long-term site restoration
- Updates dosimetry from ICRP 26 to ICRP 60, by referring to FRMAC methods

# When Do PAGs Apply?

- Not for radioactively contaminated sites
- Releases, incidents, or accidents
- Public protection is the focus
- Guidance, not regulatory
- This is not CERCLA or Superfund
- Avoided dose  $\neq$  safe limit to allow

# Relationship of EPA and DHS PAGs

- DHS vetted the Early and Intermediate PAGs for RDDs or INDs and provided needed guidance for Late Phase (recovery) guidance in 2008
  - ✓ EPA PAG Manual incorporates this late phase guidance
  - ✓ DHS document will 'sunset' when PAG Manual is finalized
- Planning Guidance for IND (2010)
  - ✓ PAGs don't apply well after an IND
  - ✓ Scope and scale
  - ✓ Priority on lifesaving and avoiding acute effects
  - ✓ Short response timeframe
  - ✓ Unique fallout decay curve
  - ✓ Referenced in PAG Manual



# Federal Register Questions

- Regarding the entire Manual:
  - ✓ Readers are referred to FRMAC Assessment Manuals for calculations using up-to-date dosimetry. Please comment on the usefulness of this approach and how to facilitate implementation of these methods.

# Early Phase

1992

- Evacuation/Shelter 1-5 rem (10-50 mSv)
  - ✓ thyroid/skin 5, 50 x higher
- KI 25 rem (250 mSv) thyroid dose (adult)
- Worker 5, 10, 25+ rem (50, 100, 250+ mSv)

2013

- Evacuation/Shelter 1-5 rem (10-50 mSv)
  - ✓ (no organ dose specified)
- KI threshold 5 rem (50 mSv) thyroid dose (child)
- Worker 5, 10, 25+ rem (50, 100, 250+ mSv)



# Potassium Iodide (KI) Actions

- FDA recommends a multi-pronged approach:

Threshold Thyroid Radioactive Exposures and Recommended Doses of KI for Different Risk Groups				
	Predicted Thyroid exposure(cGy)	KI dose (mg)	# of 130 mg tablets	# of 65 mg tablets
Adults over 40 yrs	≥500	130	1	2
Adults over 18 through 40 yrs	≥10			
Pregnant or lactating women	≥ 5			
Adoles. over 12 through 18 yrs*		65	1/2	1
Children over 3 through 12 yrs				
Over 1 month through 3 years				
Birth through 1 month				
		32	1/4	1/2
		16	1/8	1/4

- A simplified approach:
- ✓ Provide KI to public if 5 rem (50 mSv) child thyroid dose projected
  - ✓ This is a supplemental action where evacuation is the primary protection

# Guidance for Emergency Workers

Dose (rem)	Activity	Condition
5	All	None
10	Protecting valuable property	Lower dose not practicable
25*	Lifesaving or protection of large populations	Lower dose not practicable

\* Greater than 25 rem for lifesaving only to volunteers aware of the risks

# Federal Register Questions

Regarding the Early Phase:

- Please comment on the usefulness of the simplified KI implementation guidance
- Please comment specifically on the appropriateness of not retaining the skin and thyroid evacuation thresholds

# Intermediate Phase

## 1992

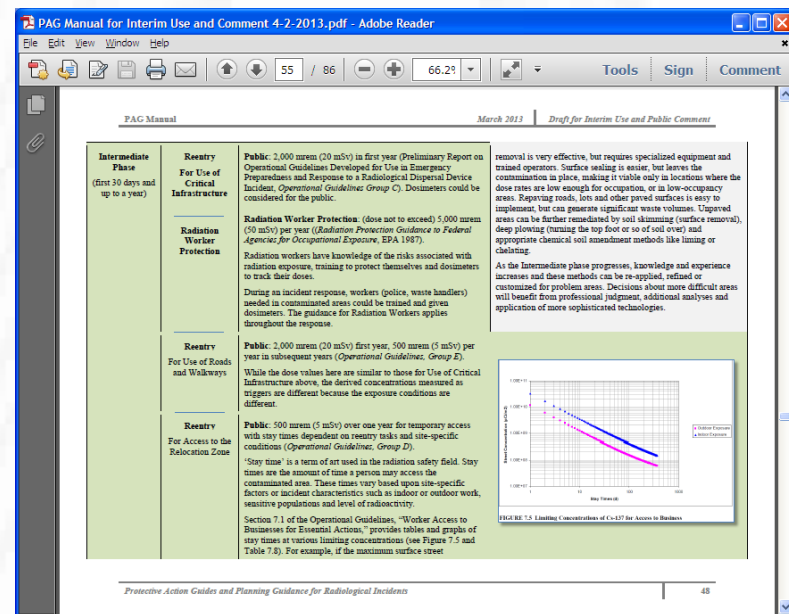
- Relocate population
  - ✓  $\geq 2$  rem (20 mSv) first year (projected dose)
  - ✓ 0.5 rem (5 mSv) any subsequent year
  - ✓ 5 rem (50 mSv) over 50 yrs
- Apply dose reduction techniques
  - ✓  $< 2$  rem (20 mSv)

## 2013

- Relocate population
  - ✓  $\geq 2$  rem (20 mSv) first year (projected dose)
  - ✓ 0.5 rem (5 mSv) any subsequent year
  - ✓ (removed 50-year Relocation PAG)
- Apply dose reduction techniques
  - ✓  $< 2$  rem (20 mSv)

# Re-entry Matrix

- New quick reference matrix
- Public, workers re-entering Relocation area to work during cleanup
- Basis: Relocation PAGs
- Assumptions: Detailed exposure scenarios in Operational Guidelines
- Do it yourself: RESRAD-RDD software



# Federal Register Questions

## Regarding the Intermediate Phase:

- Please comment on the appropriateness of removing the 5 rem over 50 years Relocation PAG
- Please comment on the format and utility of new Re-entry guidance
- Comment on whether it would be useful to develop a combined, all-pathways Intermediate Phase PAG

# Drinking Water PAG

1992

- Promised

2013

- National Primary Drinking Water Regulations provide emergency actions
  - ✓ Increased monitoring
  - ✓ Notifications
- Comments sought on whether, and what value, an emergency PAG for water should be considered

# Drinking Water PAG

- Comments sought on whether, and what value, an emergency PAG for water should be considered
- Other related guides from WHO, IAEA, DHS, FDA may inform your input





# FDA Food PAGs

## 1992

- 1982 FDA guidance
- NCRP 39 methodology
- Preventive PAG 0.5 rem (5 mSv) whole body and 1.5 rem (15 mSv) thyroid
- Emergency PAG 10 times higher, depends on impact
- Dose only, no activity levels provided

## 2013

- 1998 FDA guide, by reference
- ICRP 56 & NRPB methods
- One set of PAGs
  - ✓ 0.5 rem (5 mSv) whole body dose or
  - ✓ 5 rem (50 mSv) to most exposed organ or tissue
- Dose and derived intervention levels (DILs) provided

# Federal Register Questions

## Regarding Food and Water:

- Input on the appropriateness of, and possible values for, a drinking water PAG is being sought
- Since FDA's 1998 Food guidance is already final and published, comments are not requested on it

# Late Phase: Cleanup Goal

- Customer expectation of cleanup goal = background?
- Prescriptive or flexible
- Time, costs, risks, benefits
- What about your personal items?

# Step-wise Process

- Characterization and stabilization
- Establish cleanup goals based on options analysis
- Implementation and reoccupancy

# Decision-Making Organizations

- Focus on process for reaching consensus:
  - ✓ Decision Team – might be requesting funding
    - Senior local, state and federal officials
  - ✓ Recovery Management Team
    - Senior leadership in the field recovery effort
  - ✓ Stakeholder Working Group
    - Community leaders, local businesses, nongovernmental representatives, members of the public
  - ✓ Technical Working Group
    - Select subject matter experts, communicators

# Late Phase: Waste Management

- Document focuses on options for disposal
  - ✓ Licensed LLRW disposal facilities
  - ✓ RCRA solid and hazardous waste landfills
  - ✓ Federal facilities/sites
  - ✓ Newly developed disposal capacity
  - ✓ Appropriate for level of hazard
- States bear primary responsibility
  - ✓ Waste volumes will drive decision-making
    - Could overwhelm existing disposal capacity (see Japan)
    - Need to be considered in early planning

# EPA Waste Management Resources

- Waste Estimation Support Tool (WEST)
  - ✓ First-order estimates of waste types and volumes
  - ✓ Based on analysis of plume maps
- CBR Disposal Technology Workshop report
  - ✓ Technical issues in developing new capacity
  - ✓ <http://www.epa.gov/nhsrsrc/pubs.html>
- Minimization/Segregation Technology Guideline
  - ✓ Developed through the WARRP effort (available soon)
- Interactive, web-based waste management planning tool for incidents (early concept)

# Federal Register Questions

## Regarding Late Phase:

- Please comment on the usefulness of the brief cleanup planning guidance, and how it might be implemented in state, tribal and local plans
- Please comment on the merging of the 2008 DHS RDD/IND cleanup guide with this Manual
- Please comment on the basic waste disposal planning guidance and how it should be implemented in plans at all levels of government



# Time for Questions & Answers

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If you haven't already, please type  
your question in the webinar chat.

# The End

Thank you for your attention!

Enjoy the rest of the day!